

WHAT IS CLAIMED IS

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1. A printer controller which generates pattern data to be printed by a printer engine for use in carrying out a tone adjusting process, said printer controller comprising:

10 a memory which stores reference tone patterns and tone adjusting patterns;

selecting means for selecting a dot size of one of the reference tone patterns to be printed, said dot size being determined by a number of pixels forming each dot;

15 and

generating means for generating and outputting to the printer engine said one of the reference tone patterns by the dot size selected by said selecting means and tone adjusting patterns having tones falling
20 within a predetermined range with respect to a reference tone of said one of the reference tone patterns, based on the reference tone patterns and the tone adjusting patterns stored in said memory.

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2. The printer controller as claimed in claim 1, wherein said selecting means selects the dot size in response to an external input.

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3. The printer controller as claimed in claim 1, wherein said selecting means automatically selects the dot size depending on a counted value of a maintenance counter within the printer engine, said counted value being received from the printer engine and indicating a total operating time of the printer engine.

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4. The printer controller as claimed in claim 1, wherein said selecting means automatically selects the dot size depending on an output value of a toner sensor within the printer engine, said output value being received from the printer engine and indicating a remaining amount of toner within the printer engine.

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5. The printer controller as claimed in claim
1, wherein said selecting means automatically selects
the dot size depending on an engine ID stored in a
register within the printer engine, said engine ID being
5 received from the printer engine and indicating a type
of the printer engine.

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6. The printer controller as claimed in claim
1, wherein said selecting means selects the dot size
depending on a resolution which is input to the printer
controller.

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7. The printer controller as claimed in claim
20 1, wherein said selecting means selects the dot size
depending on each of basic colors used by corresponding
image forming sections of the printer engine.

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8. The printer controller as claimed in claim
1, wherein said generating means generates said one of
the reference tone patterns and the tone adjusting
patterns which form a circular shape as a whole, so that
5 said one of the reference tone patterns is made up of a
circular central portion and sector portions arranged
intermittently in a 360 degree range, and the tone
adjusting patterns are formed by sector portions
respectively arranged intermittently to be located
10 between two mutually adjacent sector portions of said
one of the reference tone patterns, whereby each of the
tone adjusting patterns has three sides which are
respectively adjacent to said one of the reference tone
patterns.

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9. The printer controller as claimed in claim
20 1, further comprising:

correcting means for carrying out a γ -correction
based on an external input which is made based on a
printed output result made by the printer engine in
response to said one of the reference tone patterns and
25 the tone adjusting patterns generated by said generating

means.

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10. An image forming apparatus comprising:
a printer controller which generates pattern data;
and

a printer engine which prints the pattern data
10 generated by said printer controller for use in carrying
out a tone adjusting process,

said printer controller comprising:

a memory which stores reference tone patterns
and tone adjusting patterns;

15 selecting means for selecting a dot size of
one of the reference tone patterns to be printed, said
dot size being determined by a number of pixels forming
each dot; and

generating means for generating and outputting
20 to the printer engine said one of the reference tone
patterns by the dot size selected by said selecting
means and tone adjusting patterns having tones falling
within a predetermined range with respect to a reference
tone of said one of the reference tone patterns, based
25 on the reference tone patterns and the tone adjusting

patterns stored in said memory.

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11. The image forming apparatus as claimed in claim 10, wherein said selecting means of said printer controller selects the dot size in response to an external input.

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12. The image forming apparatus as claimed in claim 10, wherein said printer engine includes a maintenance counter having a counted value which indicates a total operating time of the printer engine, and said selecting means of said printer controller automatically selects the dot size depending on the counted value of the maintenance counter received from said printer engine.

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13. The image forming apparatus as claimed in claim 10, wherein said printer engine includes a toner sensor generating an output value which indicates a remaining amount of toner within said printer engine, and said selecting means of said printer controller automatically selects the dot size depending on the output value of the toner sensor received from said printer engine.

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14. The image forming apparatus as claimed in claim 10, wherein said printer engine includes a register storing an engine ID which indicates a type of said printer engine, and said selecting means of said printer controller automatically selects the dot size depending on the engine ID stored in the register and received from said printer engine.

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15. The image forming apparatus as claimed in claim 10, wherein said selecting means of said printer

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controller selects the dot size depending on a resolution which is input to the printer controller.

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16. The image forming apparatus as claimed in claim 10, wherein said printer engine includes image forming sections respectively corresponding to basic
10 colors which are used to print a color image, and said selecting means of said printer controller selects the dot size depending on each of the basic colors.

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17. The image forming apparatus as claimed in claim 10, wherein said generating means of said printer controller generates said one of the reference tone
20 patterns and the tone adjusting patterns which form a circular shape as a whole, so that said one of the reference tone patterns is made up of a circular central portion and sector portions arranged intermittently in a 360 degree range, and the tone adjusting patterns are
25 formed by sector portions respectively arranged

intermittently to be located between two mutually adjacent sector portions of said one of the reference tone patterns, whereby each of the tone adjusting patterns has three sides which are respectively adjacent
5 to said one of the reference tone patterns.

10 18. The image forming apparatus as claimed in claim 10, wherein said printer controller further includes correcting means for carrying out a γ -correction based on an external input which is made based on a printed output result made by said printer
15 engine in response to said one of the reference tone patterns and the tone adjusting patterns generated by said generating means.

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19. A computer-readable storage medium which stores a program for causing a computer which generates pattern data to be printed by a printer engine for use
25 in carrying out a tone adjusting process, said program

comprising:

storing means for causing the computer to store
reference tone patterns and tone adjusting patterns;

selecting means for causing the computer to select
5 a dot size of one of the reference tone patterns to be
printed, said dot size being determined by a number of
pixels forming each dot; and

generating means for causing the computer to
generate and output to the printer engine said one of
10 the reference tone patterns by the dot size selected by
said selecting means and tone adjusting patterns having
tones falling within a predetermined range with respect
to a reference tone of said one of the reference tone
patterns, based on the reference tone patterns and the
15 tone adjusting patterns stored by said storing means.

20 20. The computer-readable storage medium as
claimed in claim 19, wherein said selecting means causes
the computer to select the dot size in response to an
external input.

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21. The computer-readable storage medium as
claimed in claim 19, wherein said selecting means causes
the computer to automatically select the dot size
depending on a counted value of a maintenance counter
5 within the printer engine, said counted value being
received from the printer engine and indicating a total
operating time of the printer engine.

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22. The computer-readable storage medium as
claimed in claim 19, wherein said selecting means causes
the computer to automatically select the dot size
15 depending on an output value of a toner sensor within
the printer engine, said output value being received
from the printer engine and indicating a remaining
amount of toner within the printer engine.

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23. The computer-readable storage medium as
claimed in claim 19, wherein said selecting means causes
25 the computer to automatically select the dot size

depending on an engine ID stored in a register within the printer engine, said engine ID being received from the printer engine and indicating a type of the printer engine.

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24. The computer-readable storage medium as
10 claimed in claim 19, wherein said selecting means causes the computer to select the dot size depending on a resolution which is input to the printer controller.

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25. The computer-readable storage medium as
claimed in claim 19, wherein said selecting means causes the computer to select the dot size depending on each of
20 basic colors used by corresponding image forming sections of the printer engine.

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26. The computer-readable storage medium as claimed in claim 19, wherein said generating means causes the computer OT generate said one of the reference tone patterns and the tone adjusting patterns which form a circular shape as a whole, so that said one of the reference tone patterns is made up of a circular central portion and sector portions arranged intermittently in a 360 degree range, and the tone adjusting patterns are formed by sector portions respectively arranged intermittently to be located between two mutually adjacent sector portions of said one of the reference tone patterns, whereby each of the tone adjusting patterns has three sides which are respectively adjacent to said one of the reference tone patterns.

27. The computer-readable storage medium as claimed in claim 19, wherein said program further comprises:

correcting means for causing the computer to carry out a γ -correction based on an external input which is made based on a printed output result made by the

printer engine in response to said one of the reference
tone patterns and the tone adjusting patterns generated
by said generating means.

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